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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/770,486	01/29/2001	Ronald J. Kelley	CM01465L	6842

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MOTOROLA, INC
INTELLECTUAL PROPERTY SECTION
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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 08/20/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/770,486

Applicant(s)

KELLEY ET AL.

Examiner

Harry D Wilkins, III

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 11-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 11-13 are objected to because of the following informalities: each of these claims is recited as being dependent upon claim 7. However, based on their placement, it appears that they should depend from claim 10. Nonetheless, these claims would be rejected for the same reasons below, no matter which claim they depend from. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 8, 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleby (US 5,813,222) in view of Teitel (US 4,211,537).

Appleby teaches (see abstract, figure 1, col. 6, lines 4-30 and col. 7, lines 52-61) an apparatus for producing hydrogen that includes an electrolyzer (50) for producing hydrogen and oxygen from water with the electrolyzer connected to a water supply (48). The hydrogen gas is then passed through a dryer (liquid water trap 86) to remove any water and then the hydrogen is passed into an accumulator (52) for storage.

Appleby does not teach that the hydrogen gas was used to recharge a fuel cell hydride storage reservoir. Regarding the limitation that the stored hydrogen gas is "rapidly transferred from the accumulator to the hydride storage reservoir", this is a

Art Unit: 1742

method limitation. The above limitation is not further limiting on the apparatus claim because the above limitation deals with the manner or method of use of the claimed apparatus. It has been well settled that the manner or method of use of an apparatus cannot be relied upon to further limit claims to the apparatus itself. See *In re Casey*, 152 USPQ 235, and MPEP 2114.

Teitel teaches (see fig. 3, abstract and col. 3, lines 25-31) a fuel cell hydride storage reservoir (94). The reservoir was used to provide hydrogen gas to a fuel cell.

Therefore, it would have been obvious to one of ordinary skill in the art to have attached the fuel cell hydride storage reservoir of Teitel to the hydrogen production apparatus of Appleby for recharging because the hydrogen content in the metal hydride of the storage reservoir would be depleted through use and would need to be recharged by exposing the storage reservoir to hydrogen gas.

Regarding claim 2, Teitel teaches (see abstract) that the storage reservoir was provided with heat exchanging means to heat/cool the reservoir. During transfer of hydrogen into the reservoir, Teitel teaches that cooling the reservoir causes absorption of the hydrogen gas. Therefore, it would have been obvious to include the heat exchanger in order to facilitate the absorption of the hydrogen as taught by Teitel.

Regarding claim 3, Teitel teaches (see abstract) that the storage reservoir was provided with heat exchanging means to heat/cool the reservoir. In order to use the previously absorbed hydrogen the metal hydride would have been heated (i.e.-prior to transfer of hydrogen). Therefore, it would have been obvious to include the heat exchanger in order to facilitate the desorption of the hydrogen as taught by Teitel. It

would have been within the expected skill of a routineer in the art to have added a pump to evacuate the reservoir to ensure that all of the impurities in the reservoir had been removed.

Regarding claim 4, it would have been within the expected skill of a routineer in the art to have added a pump to evacuate the reservoir to ensure that all of the impurities in the reservoir had been removed.

Regarding claim 5, Teitel teaches (see abstract) that the storage reservoir was provided with heat exchanging means to heat/cool the reservoir. In order to use the previously absorbed hydrogen the metal hydride would have been heated (i.e.-to evacuate the reservoir). Therefore, it would have been obvious to include the heat exchanger in order to facilitate the desorption of the hydrogen as taught by Teitel. During transfer of hydrogen into the reservoir, Teitel teaches that cooling the reservoir causes absorption of the hydrogen gas. Therefore, it would have been obvious to include the heat exchanger in order to facilitate the absorption of the hydrogen as taught by Teitel.

Regarding claim 6, Appleby teaches (see col. 6, lines 13-15) a vent (port 54) for venting oxygen to the atmosphere. Appleby teaches that the vent is located on the water reservoir, not the electrolyzer. However, it would have been within the expected skill of a routineer in the art to have located the oxygen vent on the electrolyzer instead of the water reservoir. See MPEP 2144.04. VI. C. Shifting the position of the vent would not affect the operation of the system.

Regarding claim 8, it would have been within the expected skill of a routineer in the art to have added means for measuring the amount of hydrogen transferred because that would allow the operator to know how much hydrogen had been transferred allowing for more accurate calculation of data, i.e.-amount absorbed by metal hydride, amount discharged by metal hydride, total efficiency of system based on consumption of hydrogen, etc.

Regarding claim 9, though Appleby is silent as to the actual size of the system, it would have been within the expected skill of a routineer in the art to have scaled the size of the system to any desired size, such as one cubic foot or less as claimed. See MPEP 2144.04. IV. A. The size of the system would not affect the operation of its components.

Regarding claim 14, Appleby in view of Teitel teach a system including a water supply connected to an electrolyzer to hydrolyze water into hydrogen and oxygen, a hydrogen accumulator and a fuel cell hydride storage reservoir to be refilled as claimed. Regarding the limitation that the stored hydrogen gas is "rapidly transferred from the accumulator to the hydride storage reservoir", this is a method limitation. The above limitation is not further limiting on the apparatus claim because the above limitation deals with the manner or method of use of the claimed apparatus. It has been well settled that the manner or method of use of an apparatus cannot be relied upon to further limit claims to the apparatus itself. See *In re Casey*, 152 USPQ 235, and MPEP 2114.

4. Claims 7 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleby (US 5,813,222) in view of Teitel (US 4,211,537) as applied to claims 1-6, 8 and 9 above, and further in view of Teitel (US 4,302,217).

As recited above, Appleby in view of Teitel '537 teach a system including a fuel cell metal hydride storage reservoir, a water supply connected to an electrolyzer for converting water to hydrogen and oxygen, hydrogen storage means including an accumulator, a dryer for drying the hydrogen, and a heat exchanger to heat and cool the reservoir.

Appleby in view of Teitel '537 do not teach a compressor attached to the accumulator.

Regarding claims 7 and 10, Teitel '217 teaches (see col. 12, lines 8-15) that by adding a compressor to increase the pressure of the hydrogen gas in a fuel cell metal hydride storage reservoir, the rate of absorption of hydrogen can be increased. Therefore, it would have been obvious to one of ordinary skill in the art to have added a compressor to the system of Appleby in view of Teitel '537 because the compressor would allow for an increased rate of hydrogen absorption. Regarding the limitation that the stored hydrogen gas is "rapidly transferred from the accumulator to the hydride storage reservoir", this is a method limitation. The above limitation is not further limiting on the apparatus claim because the above limitation deals with the manner or method of use of the claimed apparatus. It has been well settled that the manner or method of use of an apparatus cannot be relied upon to further limit claims to the apparatus itself. See *In re Casey*, 152 USPQ 235, and MPEP 2114.

Regarding claim 11, Appleby teaches (see col. 6, lines 13-15) a vent (port 54) for venting oxygen to the atmosphere. Appleby teaches that the vent is located on the water reservoir, not the electrolyzer. However, it would have been within the expected skill of a routineer in the art to have located the oxygen vent on the electrolyzer instead of the water reservoir. See MPEP 2144.04. VI. C. Shifting the position of the vent would not affect the operation of the system.

Regarding claim 12, it would have been within the expected skill of a routineer in the art to have added means for measuring the amount of hydrogen transferred because that would allow the operator to know how much hydrogen had been transferred allowing for more accurate calculation of data, i.e.-amount absorbed by metal hydride, amount discharged by metal hydride, total efficiency of system based on consumption of hydrogen, etc.

Regarding claim 13, it would have been within the expected skill of a routineer in the art to have added a vacuum pump to evacuate the reservoir to ensure that all of the impurities in the reservoir had been removed.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Weber et al teach a similar apparatus that includes hydrolyzing water into oxygen and hydrogen that includes means for capturing and pressurizing the hydrogen gas.

Art Unit: 1742

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 10:00am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw
August 6, 2003


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700